REMARKS

This Amendment amends claims 1-3, 6, and 7 in accordance with the original disclosure. Support for the claim amendments is found, for example, in Fig. 3 and in the specification at paragraphs 0006-0008 and 0026. Claims 1-14 remain in this application.

Rejections Under 35 U.S.C. § 102

Claims 1-3, 9, and 14 stand rejected for anticipation by U.S. Patent No. 5,823,280 to Lateur et al. (hereinafter "Lateur"). In view of the following remarks, reconsideration of these rejections is respectfully requested.

The present invention, as set forth in claim 1, is directed to a mobile machine comprising at least two electrical drive systems, at least one electrical control system, and at least one electrical power source. During deceleration, at least a portion of the electrical energy generated by the electrical drive system being decelerated supplies energy to operate at least one other electrical drive system rather than being sent to an energy storage mechanism.

As shown, for example, in Fig. 2 and described in the pending specification at paragraphs 0021-0024, when one of the electrical drive systems (e.g., motor 4) is used to brake the mobile machine, the motor 4, operating according to the generator principle, supplies electricity through the control system 12 to operate, i.e., power, the other electrical drive system (e.g., motor 5). The motor 5 can drive a hydraulic pump 8 to transport hydraulic fluid via the control valve block 10 to hydraulic consumers. Thus, in the claimed invention, the electricity generated by the decelerating motor 4 can be used to operate the other motor 5 rather than being fed to a buffer storage mechanism or similar device. This significantly reduces the complexity and overall size of the drive system.

Lateur discloses a drive system for a vehicle. The drive system operates either in an all-electric mode or can be powered by a heat engine (column 5, lines 60-64). While the Lateur arrangement does have first and second motor/generators 12, 14, there is no teaching or suggestion in Lateur that during deceleration of one of these motors the electrical energy is used to operate the other motor rather than being directed to an electrical storage device. In Lateur, both the first and second motors 12, 14 are coupled via a planetary gear system 18 to the vehicle's drive transmission 20. A heat engine 22 is coupled via a clutch 82 to the first motor 12. During all-electric mode, both the first and second motors 12, 14 are

operated to drive the transmission 18. When acceleration is desired, a power controller 16 changes the speed of the motors 12, 14 to increase torque. However, whenever deceleration is desired, the power controller 16 changes the commutation phasing of the first and second motors 12, 14 to apply a counter torque to lower the rotational speed of the output shaft 62. When the power of the electrical storage device 24 is low, a charge sensor 34 initiates a microprocessor 26 to send a start signal to start the heat engine 22. While the heat engine 22 is driving the first motor 12, the power controller 16 controls energy flow from the electric storage device 24 to the second motor 14. The electrical storage device 24 is recharged by the first motor 12. When the state of charge exceeds a predetermined level, the microprocessor 26 turns off the heat engine 22 (Lateur at column 7, line 60 to column 9, line 45).

On pages 5 and 6 of the Office Action, the Examiner notes that while in the previous Response Applicant argued that Lateur does not teach or suggest electrical energy generated by one decelerating electrical drive system being used to "power" another electrical drive system, the specific language of previous claim 1 was that electrical energy generated by the decelerating electrical drive system "is fed" to another electrical drive system. As set forth above, Applicant has amended claim 1 to specifically recite that this energy derived from deceleration of one electrical drive system supplies energy to operate another electrical drive system rather than being sent to an energy storage mechanism. The Examiner notes that Lateur in Fig. 1 broadly discloses the electrical drive systems 12, 14 connected mechanically 74, 76 and electrically through a power controller 16. However, as the Examiner appreciates, Lateur does not teach or suggest the claimed invention in which one decelerating electrical drive system supplies operational energy to the other electrical drive system. Thus, claim 1 is not anticipated by Lateur.

Claims 2, 3, 9, and 14 depend from claim 1 and are believed allowable for the same reasons as set forth above with respect to claim 1. Additionally, claim 3 includes the limitation that the electrical energy storage mechanism is charged by the decelerating electrical drive system only with the amount of energy that is not required for normal operation of the other drive system. That is, the energy generated by the decelerating drive system is first used to supply operational energy to the other drive system. Any additional electrical energy over and above this amount is sent to an energy storage mechanism. This

limitation is neither taught nor suggested in Lateur. Therefore, for all of the above reasons, claims 2, 3, 9, and 14 are believed patentable over Lateur.

Rejections under 35 U.S.C. § 103

Claims 4, 8, and 10-12 stand rejected for obviousness over Lateur. Claims 5 and 13 stand rejected for obviousness over Lateur in view of U.S. Patent No. 6,454,033 to Nathan et al. (hereinafter "Nathan"). Claims 6 and 7 stand rejected for obviousness over Lateur and Nathan in view of U.S. Patent No 4,278,298 to Sauka et al. (hereinafter "Sauka"). In view of the following remarks, reconsideration of these rejections is respectfully requested.

Lateur has been discussed above. Nathan discloses a vehicle having a battery 61 powering an electrical motor 60. The electrical motor 60 operates when the vehicle is driving at a nominal speed in order to drive, at a constant speed, a variable displacement hydraulic pump 4 connected to at least one variable displacement hydraulic motor 3.

Sauka discloses a braking system having a dynamic and a mechanical brake whose operation is controlled by a central control circuit.

Neither Nathan nor Sauka, either alone or in combination, overcomes the shortcomings of Lateur discussed above with respect to claim 1. Therefore, since claims 4-8 and 10-13 depend from claim 1, these claims are believed allowable for substantially the same reasons as discussed above with respect to claim 1. Additionally, claims 4 and 12 include the limitation that the second drive system, if it is not already in operation, is activated to absorb the energy produced by the decelerating drive system only when the electrical storage mechanism is fully charged. This limitation is neither taught nor suggested in the cited art. Moreover, claims 6 and 7 include the limitation that energy introduced into the hydraulic system by the second drive system is converted into thermal energy by a pressure reducing valve. As discussed in the pending specification at paragraphs 0010 and 0023-0024, when the decelerating motor 4 supplies electricity to the other motor 5, the second motor 5 drives a hydraulic pump 8 to transport hydraulic fluid through a control valve block 10 to hydraulic consumers. If the hydraulic pump 8 supplies more hydraulic fluid than is required by the consumers 11, the excess fluid is transported via a pressure reducing valve into the reservoir 9 and energy is dissipated. This limitation is neither taught nor suggested in any of the cited references. Therefore, claims 4-8 and 10-13 are believed patentable over the cited prior art and in condition for allowance.

Conclusion

In view of the above remarks, reconsideration of the rejections and allowance of all of claims 1-14 are respectfully requested.

Respectfully submitted,

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